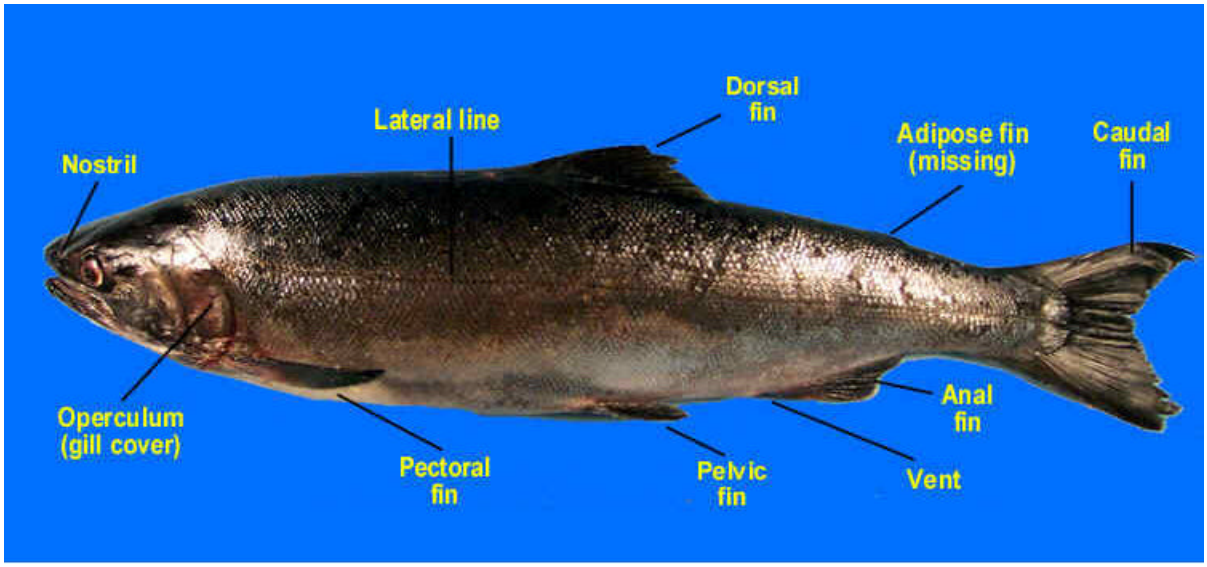
SALMONIDS IN THE CLASSROOM:
SALMON DISSECTION

EXTERNAL ANATOMY



Shape

- Salmon are streamlined to move easily through water. Water has much more resistance to movement than air does, so it takes more energy to move through water. A streamlined shape saves the fish energy.

Fins

- Salmon have eight fins including the tail. They are made up of a fan of bone-like spines with a thin skin stretched between them. The fins are embedded in the salmon's muscle, not linked to other bones, as limbs are in people. This gives them a great deal of flexibility and manoeuverability.
- Each fin has a different function. The caudal or tail, is the largest and most powerful. It pushes from side to side and moves the fish forward in a wavy path.
- The dorsal fin acts like a keel on a ship. It keeps the fish upright, and it also controls the direction the fish moves in.
- The anal fin also helps keep the fish stable and upright.
- The pectoral and pelvic fins are fused for steering and for balance. They can also move the fish up and down in the water.
- The adipose fin has no known function. It is sometimes clipped off in hatchery fish to help identify the fish when they return or are caught.

Slime

- Many fish, including salmon, have a layer of slime covering their body. The slime layer helps fish to:
  - slip away from predators, such as bears.
  - slip over rocks to avoid injuries
  - slide easily through water when swimming
  - protect them from fungi, parasites, disease and pollutants in the water

Scales

Remove a scale by scraping backwards with a knife. Look at the scale with a magnifying lens.

- Most fish, including salmon, have a layer of scales covering their skin. Scales are small, hard plates, like fingernails, that cover the body for protection. The scales overlap to form a flexible armour plating to protect from predators and bruising.

Magnified salmon scale

- Salmon begin to grow scales at the fry stage.
- The way scales are arranged in rows or patterns is different for each species.
- Fish have the same number of scales all their lives. As the fish grows, the scales grow. They form lines, like the rings in a tree. Biologists can tell the age of a fish and how many years it spent in fresh and saltwater from the groups of lines on its scales.
- If a scale is lost, another scale will grow to replace it, but it will not have the growth lines in the center.

Inner ear

- Fish have an inner ear, but no outer ear. Sound waves travel through the water and through their body to the bones (odolyth) in the inner ear. Salmon probably use hearing to detect predators and other threats. Fish also detect sound waves through their lateral line.

Lateral line

- The lateral line functions somewhat like an ear. It detects vibrations and

pressure waves in the water, just as an ear does in air. The lateral line is a series of liquid-filled canals below the skin along the side of the fish. It combines aspects of touch, hearing and seeing. Fish use the lateral line mainly to tell distance and water flow, and to detect disturbances in the water. Some fish can use the lateral line to find their way when it is too dark or muddy to see.

Nostrils

- Salmon have nostrils above their mouth, but no nose. Fish do not breath through their nostrils. The nostrils are a small indention that is not connected to the mouth. Fish smell very tiny amounts of chemicals in the water. They use this information to detect harmful pollution and avoid potential threats, if possible. Salmon also use smells to recognize their way home from the ocean.

Mouth

- Salmon have teeth that are sharp and needle-like, which they use to grab their prey. Their tongue also has two sharp shafts. Salmon do not chew their food.
- Salmon have taste buds inside their mouth, like people do. They probably taste salt, sweet, bitter and acid, but their sense of taste has not been studied in detail.

Operculum (gill cover)

- The operculum protects the gills. It is a hard outer lining like a flexible plate that the fish opens and closes to let water pass over the gills.